(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 17 June 2004 (17.06.2004)

PCT

(10) International Publication Number WO 2004/051829 A3

H05B 41/392, (51) International Patent Classification7: H02M 7/48

(21) International Application Number:

PCT/KR2003/002603

(22) International Filing Date:

28 November 2003 (28.11.2003)

(25) Filing Language:

English

(26) Publication Language:

English

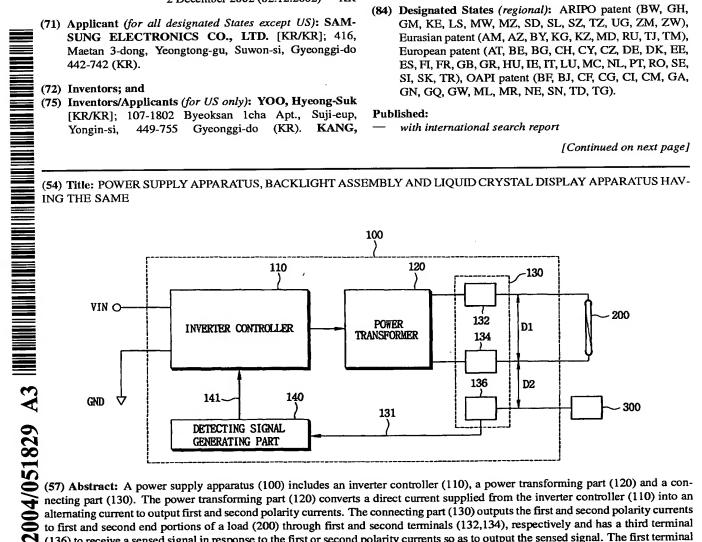
(30) Priority Data: 10-2002-0075819

2 December 2002 (02.12.2002) KR

- (71) Applicant (for all designated States except US): SAM-

Moon-Shik [KR/KR]; 105-402 Hyojachon Hyundai Apt., Seodang-dong, Bundang-gu, Seongnam-si, 463-767 Gyeonggi-do (KR).

- (74) Agent: PARK, Young-Woo; 5F., Seil Building, #727-13, Yoksam-dong, Gangnam-gu, Seoul 135-921 (KR).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),



alternating current to output first and second polarity currents. The connecting part (130) outputs the first and second polarity currents to first and second end portions of a load (200) through first and second terminals (132,134), respectively and has a third terminal (136) to receive a sensed signal in response to the first or second polarity currents so as to output the sensed signal. The first terminal (132) is spaced apart from the second terminal (134) by a first insulating distance (D1), and the third terminal (136) is spaced apart from the first or second terminals (132,134) adjacent to the third terminal (136) by a second insulating distance (D2). Therefore, the sensed signal is independent of the output power, thereby increasing the sensing efficiency.





before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report: 2 December 2004

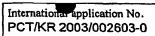


INTERNATIONAL SEARCH REPORT

International application No. PCT/KR 2003/002603-0

CLA	ASSIFICATION OF SUBJECT MATTER	•		
IPC ⁷ : H	105B 41/392, H02M 7/48			}
	g to International Patent Classification (IPC) or to both nat	tional classification a	nd IPC	
	LDS SEARCHED	1. 15. 1		
_	documentation searched (classification system followed b	•	•	
IPC':F	105B 37/00,39/00,41/00, H02M-7/00, G0	99G-3/00, G02	F-1/133, H01R	_9/00,11/00
Documen	tation searched other than minimum documentation to the	extent that such doci	uments are included in	the fields searched
Electronic	c data base consulted during the international search (name	e of data base and, w	here practicable, searc	h terms used)
WPI, E	PODOC, PAJ			
C. DO	CUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document, with indication, where appropriate	e, of the relevant pass	ages	Relevant to claim No.
Α	JP 9-073989 A (MURATA MANUFACT (31.07.1997) (abstract). [online] [retrie Retrieved from: EPOQUE PAJ Databa	ved on 2004-0		1-3,6,7,9- 11,15- 19,21,24,25
Α	IP 2000-294390 A (HISANAGA DENKI KK) 5 February 2001 1,2,6-8,15 05.02.2001) (abstract). [online] [retreived on 2004-09-09]. Retrieved from: EPOQUE PAJ Database			1,2,6-8,15
Α	JP 8-202276 A (HITACHI LTD; HITAC KK) 26 December 1996 (26.12.1996) [retrieved on 2004-09-09]. Retrieved fr Database	(abstract). [o	nline]	1,6,21
				į
				}
Fur	ther documents are listed in the continuation of Box C.	See pater	t family annex	
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance. "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
	he actual completion of the international search	Date of mailing of t	he international searc	report
L	14 September 2004 (14.09.2004)	L	ember 2004 (2	2.09.2004)
	d mailing adress of the ISA/AT	Authorized officer		
	an Patent Office	}	NEWRKLA I	•
1	ner Straße 87, A-1200 Vienna	Tologham 1/6	52 AO A loos	
I Receimil	e No. 1/53424/535	Telephone No. 1/5	73424/333	





The dependency of claims14 and 20 seems to be wrong. Claim 14 should probably dependent on claim 13 and claim 20 should probably be dependent on claim 18.	be
,	

Form PCT/ISA/210 (extra sheet) (July 1998)





INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No. PCT/KR 03/02603-0

Patent document cited in search report date JP A 20002943 90A2 JP A 8202276A 2 JP A 9073989A 2	Patent family Put member(s) none none none	
JP A 8202276A 2 JP A 9073989A		
JP A 9073989A	none	
	•	
	•	
•		